

ABSTRACT

A habitat friendly, pressure conversion, wind energy extraction system is disclosed for safely extracting usable energy from wind. The system includes one or more shrouds or concentrator wings that convert the dynamic pressure of wind into relatively lower static pressure and thereby induces a vacuum that draws wind into a turbine centralized within the shrouds or concentrator wings. As such, the turbine impellor blades may be significantly smaller than the large diameter rotor blades of current popular designs and may be enclosed within the shrouds or concentrator wings that present themselves as highly visible objects and as such are easily avoided by birds in flight. The novel system in particular includes a device and method of airflow regulation than minimizes or prevents the stalling, or the generation of a turbulent flow of wind over or between the shrouds or concentrator wings of the invention. This stalling has been shown to occur when airflow is quickly accelerated by force of vacuum and drawn out of the turbine shroud which then mixes with and disturbs the otherwise smooth flow of wind over or between the shrouds or concentrator wings. The system may also include an aerobrake that responds quickly to protect the impellor blades or associated mechanisms from overspeeding or exceeding other design limitations under gusting or violent wind conditions. The invention may also include a method of guiding elements of the invention to orient appropriately into prevailing winds, and a means to support elements of the invention, without unduly impeding the free flow of wind. Other advantages and objects are as well disclosed that increase safety and efficiency, increase installation potential of the invention, reduce costs and expenses, and minimize negative environmental impact.